aps

Gregory Bernosky
Director
State Regulation
Mail Station 9712
PO Box 53999
Phoenix, Arizona 85072-3999
Tel 602-250-3341
Gregory.Bernosky@aps.com

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ORIGINAL

Docket Control
Arizona Corporation Commission
1200 W. Washington Street
Phoenix, AZ 85007

RE: Request for Informal Comment in the matter of the proposed rulemaking regarding Interconnection of Distributed Generation Facilities (RE-00000A-07-0609)

Dear Utilities Division Staff:

Arizona Public Service Company (APS or the Company) offers the following comments in response to Staff's June 26, 2015 request for informal comment regarding the proposed interconnection of distributed generation (DG) facilities rulemaking. APS appreciates the opportunity to work with Staff and the Commission to explore revisions to the Interconnection Rules originally proposed in 2007. There have been significant changes in the applicable standards, technology (storage, advanced inverters, fuel cells, etc.), and the distributed generation market since the 2007 draft rules were proposed.

The purpose of this letter is to respond to the specific questions posed by Staff and continue dialogue on other critical issues that require further discussion. These issues must be addressed for APS to continue to ensure safe and reliable power consistent with local and national safety standards while providing timely processing of applications from those desiring to become DG customers. As safety standards, the DG market and technology evolve, APS must retain the flexibility to evolve as well. APS recommends a workshop where the Commission and utility engineering staff can discuss more technical matters and timelines in the proposed rules.

Brief History of the 2007 Draft Proposed Rules

Commission Decision No. 69674 (June 28, 2007) contained a draft interconnection document that was intended to be a guide until formal interconnection rules were promulgated. The lengthy process began with extensive comments and participation by utilities, government agencies, energy efficiency and environmental advocacy groups, utility investors, large industrial customers, advocates for renewable resources, competitive power providers, advocates for distributed generation, product suppliers, research entities, and others. APS was extensively involved in those proceedings. Given the passage of time, however, these guidelines are no longer reflective of the current state of the industry or technology. For example, when the 2007 draft was prepared,

IEEE's 1547.6 standard was in draft form. Today, it has been revised and adopted. In addition, the volume of interconnection applications APS receives has increased dramatically from approximately 290 annually in 2007 to 8,187 annually in 2014. In each of the last two months alone, APS has received approximately 1,300 applications to interconnect residential rooftop distributed generation. Certain matters in the 2007 draft, as well as the applicable IEEE standard, are extremely technical and a fulsome discussion would be beyond the scope of this informal response letter. These matters would be more adequately addressed in a workshop environment.

APS Responses to Staff's Questions

1. **Proposed Rules 14-2-2616(D) and 14-2-2621 – Interconnecting to a Network Service**

Currently, certain large customers (including City of Phoenix, ASU, hospitals, high-rises, etc.), which require extraordinarily reliable service with back-up capabilities receive power from APS via network service. Network service is sensitive to current imbalance issues, reverse power flows, and substantial voltage imbalances that can be caused by interconnecting DG to the distribution grid. Because of these challenges, APS will only connect DG systems to network service on a case-by-case basis, after individual studies have been performed to ensure it will not compromise the network service and customer reliability.

APS generally limits interconnection to a maximum of 10kW on these networks, and would only connect larger DG systems after necessary studies are conducted to ensure stability of the network service. This limitation is necessary to provide safe and reliable power to APS customers on network service and to protect the network while maintaining compliance with local and national industry safety standards.

2. **Proposed Rule 14-2-2617(A) – Screening Test and Study/Fast/Super Fast Track**

The timelines in the proposed rules were initially drafted nearly ten years ago. As penetration of DG in APS territory has increased rapidly since then, APS requires the time and flexibility to conduct studies and modeling as needed. Today, APS is aware that irrespective of system size and feeder penetration level, interconnecting DG on specific distribution feeders, or at certain spots along a distribution feeder, may impose greater negative impacts on a lightly loaded feeder than on a feeder with more than 50% DG penetration. The system implications and risks from high DG saturation levels on feeders and transformers cannot be understated. Utilities must have the flexibility and discretion to take the necessary time to study the aggregate impacts of DG and when necessary take appropriate steps to mitigate any significant engineering concerns due to high DG levels.

APS is open to discussing a process of categorizing individual DG applications by the risks associated with the interconnection and establishing timeframes for each risk level using a multi-faceted criteria beyond those established in the proposed rules. Utilities need the flexibility to determine when an interconnection study is required, as well as define the breadth and scope of that study. The risks associated with each application to interconnect vary depending upon the type of generation, the location and size of the generating system, the penetration of distributed generation on the specific feeders, the length, and the size and technical characteristics of the feeder, among other things. The ability to work with customers to assess these risks and establish plans to

mitigate any challenges to reliability and safety necessitate an individualized rather than a formulaic approach.

Thus, APS suggests removing the proposed Screening requirements, "Study Track", "Fast Track" and "Super Fast Track" from the proposed rules and continuing a discussion regarding the time necessary to assess individual DG interconnect risks, and for processing the voluminous applications being received. APS must have the discretion to determine which and to what extent an interconnection study must be performed for all interconnection applications.

3. Proposed Rules 14-2-2601(9), R14-2-2618(C)(5)(a)(v), R14-2-2618(C)(6)(b), R14-2-2619(C)(6)(a)(v), R14-2-2619(C)(7)(b), and R14-2-2620(C)(11)(a)(v) – Regarding Disconnect Switches

For safety reasons, APS requires a visual open and lockable disconnect switch (on the AC side) for proper isolation of the customer's generation from the APS System. Having a lockable disconnect switch, that can be viewed visually with unrestricted access, is critical to the safety of APS's workforce, customers, general public and emergency personnel. APS does not support the use of a circuit breaker as an alternative disconnecting means. A breaker is not a visual open disconnect, nor can it be used in a reliable manner to switch or lock out distributed generation. APS owns, and for safety reasons, has exclusive control of its lockable disconnect switches. APS would not have exclusive control over a customer owned and controlled breaker, thus creating risk for APS employees, systems and emergency personnel. In addition, because breakers are not designed to be switching devices, using a breaker as a disconnect switch can cause other problems, such as changing the breaker trip point. These safety hazards exist irrespective of distributed generation system size.

APS's current practice and position on this issue is in accord with current safety standards. Under National Fire Protection Association (NFPA) standard 70E, operating breakers do not establish an Electrically Safe Work Condition. Article 120.2 of NFPA 70E further states that if electrical conductors have been disconnected, but not locked out, then it is not considered an electrically safe condition. For these reasons, APS strongly advocates that utilities must be allowed to require lockable disconnect switches on distributed generation interconnections, irrespective of system size.

Other Critical Issues for Discussion

A. Proposed Rule R14-2-2622 – Pre-Approval and Reporting Requirements

Because distributed generation interconnection is quickly evolving and penetration is increasing robustly, utilities need the flexibility to manage the interconnection process in order to quickly evolve to meet new safety requirements and technological advancements. APS's current interconnection requirements and application process have developed over time as a result of advances in safety requirements as well as extensive interaction with customers and stakeholders. Throughout this maturation process, APS has continued to provide safe, reliable power and a timely interconnection process.

The APS Interconnection Requirements are highly technical and driven by local and national safety standards to ensure safety and reliability.[1] From time to time, and most recently in March of 2015, APS updated and revised its interconnection requirements and application process to keep current with technological advancements, market conditions and safety standards. APS must have the flexibility to quickly revise interconnection requirements to rapidly adapt to changing technology and safety requirements. Accordingly, APS suggests that any interconnection rules do not create barriers to timely revising and updating utility specific interconnection requirements in such a dynamic area of the industry; such barriers could create an environment where utility interconnection requirements lag behind the best industry practices and utility and customer systems might be placed at risk.

APS suggests that any interconnection rules subsequently adopted by the Commission not require pre-approval of utilities' interconnection requirements by the Commission, nor should updates be subject to a 60 day waiting period. This delay could be a barrier to not only providing timely processing, but more importantly, to providing safe and reliable power according to evolving local and national safety standards.

APS also recommends that the Commission consider incorporating any necessary DG interconnection reporting requirements into an existing report, instead of creating a new Annual Interconnection Report, which may be duplicative and unnecessarily burdensome to utilities and the Commission.

B. Removal of Mandatory Timeframes in Rules 14-2-2618 through 2620

As discussed above, the volume of DG applications being received by APS on a monthly basis has increased substantially since 2007. Over the past year, APS has received on average between 700-1000 applications every month. This volume of applications directly affects how quickly APS can process them, and it also affects how those applications must be processed. For example, as penetration of DG increases on a distribution line, the review process and the potential need for upgrades on that line may increase. It should also be noted that the quality of applications APS receives from DG installers affects processing time.

APS would likely need substantially more staff as well as additional investments in modeling tools and software to meet the proposed timeframes, and even then, compliance would be affected by the number and types of applications being received on a monthly basis. APS is concerned about the ability to meet reliability and safety standards under the processing timeframes contained in the proposed rules. APS suggests the specific timeframes for R14-2-2618 through 2620 be removed. However, the Company is open to ongoing discussion of alternatives for categorizing and processing applications (See Section 2 above).

C. Certification Standards Section in Rule 14-2-2613

APS does not oppose minimum safety standards, but has a number of concerns regarding R14-2-2613. First, APS must have flexibility, consistent with applicable local and national safety standards, to determine the types and specification of any equipment that interconnects with the APS system. Thus, any certification standards should not limit utilities ability to impose more stringent or additional requirements to meet utility

[1] A copy of APS's current Interconnection Requirements for Distributed Generation is made accessible to the public at https://www.aps.com/library/solar%20renewables/InterconnectReq.pdf.

requirements for safety and reliability. Second, national standards and certifications for equipment are constantly evolving; in some instances without any advance notice. The rules must reflect that the referenced safety standards may be modified or amended from time to time to avoid the need for revising the rules. In addition, the certification standards in the rules cannot be viewed as exhaustive or exclusive as they do not address the National Electrical Code or the National Electric Safety Code. Because these standards and certifications evolve rapidly, they are better addressed in the utilities' specific interconnection requirements.

D. Revision of Rule 14-2-2607 to Provide Utilities Flexibility to Require Insurance

Under the proposed rules, utilities are prohibited from requiring customers to obtain general liability insurance coverage as a condition for interconnection. However, due to the serious risks associated with interconnecting and operating a generating facility that attaches to the APS grid, the Company recommends that every customer obtain insurance. In addition, APS currently requires certain large commercial distributed generating projects to have insurance. Although APS does not require that every customer have insurance, the Company suggests that the rules be revised to allow utilities the discretion to require insurance in certain limited instances where necessary good cause exists, such as interconnecting a large system.

E. The Applicability of the Rules R14-2-2602(b) Allowing Systems Above 10 MW

APS currently allows distributed generation systems greater than 10MW to be safely and reliably interconnected at a single point. APS has interconnected customer owned power plants larger than 10MW, and the Company is interested in continuing this practice. APS recommends that R14-2-2602(b) be revised to allow systems greater than 10MW to be interconnected at a single point at the discretion of the utility, remaining outside the scope of any adopted Interconnection Rules.

Conclusion

There are a number of other items that warrant continued review and discussion, including: the rights and responsibilities of customers and utilities, the applicability of the rules to utility owned systems, evolving DG technologies, the flexibility for utility communication and control of DG, the recovery of fees and costs related to interconnection studies, applicable system upgrades necessitated by DG interconnection, among others.

The purpose of this letter is to respond to Staff's questions and continue dialogue on other critical issues. As the safety standards, the DG market and technology evolve, APS must retain the flexibility to evolve as well. APS recommends a workshop where the Commission and utility engineering staff can discuss more technical matters and timelines in the proposed rules.

APS appreciates the opportunity to be a part of this process and looks forward to the continued dialogue throughout the rulemaking process with the Commission. If the Commission Staff have any questions, please contact Gregory Bernosky at (602) 250-4849 or Gregory.Bernosky@aps.com.

Sincerely,

Kerri C
for Greg Bernosky

Gregory Bernosky
Director
State Regulation
Arizona Public Service Company

Copies of the foregoing delivered/mailed this 24th day of July, 2015, to:

Jeff Schlegel
SWEEP
1167 W. Samalayuca Dr.
Tucson, AZ 85704

Jerry Payne
Cooperative International Forestry
333 Broadway S.E.
Albuquerque, New Mexico 87102

Robert Annan
Annan Group
6605 East Evening Glow
Scottsdale, Arizona 85262

Brian Hageman
Caren Peckerman
Richard Brill
Deluge, Inc.
4116 East Superior Avenue Suite D3
Phoenix, Arizona 85040

David Berry
Western Resource Advocates
P.O. Box 1064
Scottsdale, AZ 85252-1064

Daniel Pozefsky
Chief Counsel
RUCO
1110 W. Washington, Suite 220
Phoenix, AZ 85007

Eric C. Guidry
Western Resource Advocates
2260 Basehe, Suite 200
Boulder, Colorado 80302

John Wallace
Grand Canyon State Electric Cooperative Association, Inc.
2210 South Priest Drive.
Tempe, Arizona 85282

C. Webb Crockett
Attorney
Fennemore Craig
2394 East Camelback Road, Suite 600
Phoenix, AZ 85016

Patrick Black
Attorney
Fennemore Craig
3003 N. Central Avenue, Suite 2600
Phoenix, AZ 85012-2913

Justin Brown
Southwest Gas Corporation
5421 Spring Mountain Road
Las Vegas, Nevada 89150

Michael Patten
Attorney
SNELL & WILMER L.L.P.
One Arizona Center
400 E. Van Buren Street, Suite 1900
Phoenix, AZ 85004-2202

Copies of the foregoing delivered/mailed this 24th day of July, 2015, to:

Bradley Carroll
Tucson Electric Power Company
88 East Broadway Blvd.
Mail Stop HQE910
P.O. Box 711
Tucson, AZ 85702

Gary Mirich
Energy Strategies
One North Central Avenue
Suite 1120
Phoenix, Arizona 85004

Amy LeGere
4850 Reata Road
Flagstaff, Arizona 86004

Colin Murchie
Solar Energy Industries Association
805 15 N.W., #510
Washington, DC 20005

Adam Browning
The Vote Solar Initiative 182-2 Street
Suite 400
San Francisco, California 94105

Tyler Carlson
Mohave Electric Cooperative
Post Office Box 1045
Bullhead City, Arizona 86430

Valerie Rauluk
Greater Tucson Coalition For Solar Energy
Post Office Box 1045
Bullhead City, Arizona 85733

Steven M. Olea
Director, Utilities Division
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Janice M. Alward
Legal Division
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Dwight Nodes
Administrative Law Judge
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Jana Brandt
Kelly Barr
Salt River Project
Post Office Box 52025
Mail Station PAB221
Phoenix, Arizona 85072